

## 11.4 FUEL SHUT-OFF VALVE

See Figure 46 or 47, depending on model variant.

### 11.4.1 DESCRIPTION

The fuel shut-off valve is a two-position ON – OFF valve which is located in front of the main longitudinal beam.

### 11.4.2 FUEL VALVE REMOVAL & INSTALLATION

1. Turn OFF both taps between wing tanks and header tank. Cover both tank cap vents.
2. Remove fuel shut-off valve cover.
3. Remove shut-off valve handle.
4. Remove cover plate.
5. Disconnect and cap fuel lines at shut-off valve.
6. Remove shut-off valve.
7. Reverse the preceding steps for installation.

### **WARNING**

Fuel valves between wing tanks and header tanks must be in the “ON” position during flight. CS-VLA variants must have these taps wired “ON” using electrical fuse wire.

Ensure wing tank cap vent covers are removed.

## 11.5 FUEL FILTERS

### 11.5.1 CS-VLA FILTER DESCRIPTION

The fuel filter is of the in-line type and is located inside the header tank enclosure behind the seats.

### 11.5.2 NON CS-VLA MODEL VARIANT FILTER DESCRIPTION

The fuel filter is of the in-line type and is located just inside the cabin above the rudder pedals.

### 11.5.3 CS-VLA MODEL FUEL FILTER REMOVAL & INSTALLATION

1. Turn fuel valves between wing tanks and header tank to OFF. Cover wing tank cap vents.
2. Try to kink to main fuel line above the fuel filter being careful not to damage.
3. Place a cloth beneath the filter to collect any fuel which may be split during removal of the filter.



4. Disconnect the fuel lines at both ends of the filter.
5. Remove filter.
6. Reverse the preceding steps for installation. Ensure waste cloth is removed.

### **WARNING**

**Fuel valves between wing tanks and header tanks must be wired in the “ON” position using electrical fuse wire during flight.**

**Ensure wing tank cap vent covers are removed.**

**The fuel filter must only be installed in one direction. An arrow on the side of the filter marks the fuel flow direction. Ensure this arrow is pointed towards the Firewall and Engine.**

#### **11.5.4 NON CS-VLA MODEL FUEL FILTER REMOVAL & INSTALLATION**

7. Turn main fuel valve on the cabin main beam OFF.
8. Place a cloth beneath the filter to collect any fuel which may be split during removal of the filter.
9. Disconnect the fuel lines at both ends of the filter.
10. Remove filter.
11. Reverse the preceding steps for installation. Ensure waste cloth is removed.

### **WARNING**

**The fuel filter must only be installed in one direction. An arrow on the side of the filter marks the fuel flow direction. Ensure this arrow is pointed towards the Firewall and Engine.**

## **11.6 FUEL PUMPS**

### **11.6.1 PRIMARY PUMP**

The Primary Fuel Pump is located on the Starboard rear of the Engine. Refer to engine Maintenance & Instruction Manual for details.

### **11.6.2 CS-VLA SECONDARY PUMP**

A secondary, electronic pump is mounted inside the header tank enclosure behind the seats. This pump is a back-up to the Primary Pump. It is recommended that the Secondary Pump be engaged at least during take-off and landing.

### **11.6.3 NON CS-VLA SECONDARY PUMP**

A secondary, electronic pump is mounted inside the centre console above the rudder pedals. This pump is a back-up to the Primary Pump. It is recommended that the Secondary Pump be engaged at least during take-off and landing.



## 12 SECTION 12 – INSTRUMENTS & INSTRUMENT SYSTEMS

### 12.1 GENERAL

This Section describes the typical instrument installation and its operating system. Emphasis is placed on trouble shooting and corrective measures only. It does NOT deal with specific instrument repairs as this usually requires special equipment and data and should be handled by instrument specialists. Malfunctioning instruments should be either returned to JABIRU AIRCRAFT Pty Ltd or sent to an approved instrument overhaul and repair station for servicing.

Our concern here is with preventive maintenance on the various instrument systems and correction of system faults which will result in instrument malfunctions. The descriptive material, maintenance and trouble shooting information in this Section is intended to help the owner or mechanic determine malfunctions and correct them, up to the defective instrument itself, at which point an instrument technician should be called in. Some instruments, such as Oil Temperature and Pressure Gauges, are simple and relatively inexpensive and repairs will usually cost more than a new instrument. Flight instruments, on the other hand, are usually well worth repairing. The words "replace instrument" in the text, therefore, should be taken only in the sense of physical replacement in the aircraft. Whether replacement is to be with a new instrument, an exchange one, or an original instrument is to be repaired must be decided on the basis of the individual circumstances.

### 12.2 INSTRUMENT PANEL

The instrument panel assembly consists of a stationary panel. The lower part of the panel contains switches and circuit breakers which are not sensitive to vibration. The instruments are screw-mounted to the panel.

#### 12.2.1 INSTRUMENT PANEL REMOVAL & INSTALLATION

The panel is secured to the Firewall and for normal maintenance is not considered removable. Access to instruments etc is gained by removing the panel facia containing the instruments from the facia.

1. Unscrew & remove the facia retaining screws from around the perimeter of the panel.
2. Remove the front facia. It is normally best to lie the facia on a cushion or similar while working to reduce the risk of damaging the instruments or facia.
3. Take care not to strain connections on wires or tubes.
4. Assembly is the reverse of the above procedure.

#### 12.2.2 INSTRUMENTS

Refer to Figure 44.

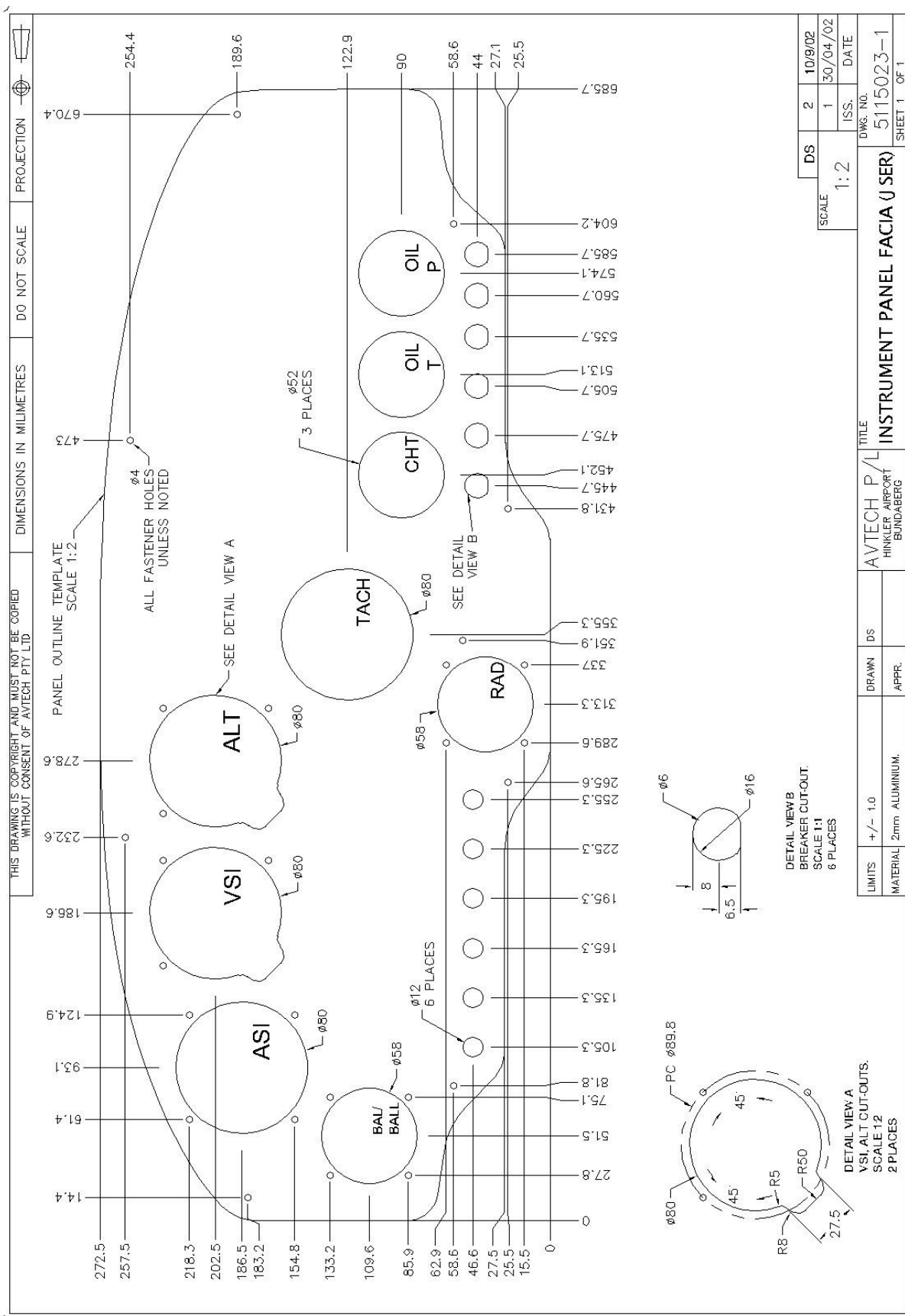


Figure 44. Instrument Panel Layout – Basic Panel



### 12.2.3 INSTRUMENT REMOVAL

Most instruments are secured to the panel with screws inserted through the panel face. To remove an instrument, disconnect wiring or plumbing to the instrument, remove mounting screws and take instrument out from behind, or in some cases, from the front of the panel.

In all cases when an instrument is removed, disconnected lines or wires should be protected. Cap open lines and cover pressure connections on instrument to prevent thread damage and entrance of foreign matter. Wire terminals should be insulated or tied up so that accidental ground or short-circuiting will not occur.

### 12.2.4 INSTALLATION

Generally, the installation procedure is the reverse of the removal procedure. Ensure mounting screws and nuts are tightened firmly, but do not over-tighten, particularly on instruments having plastic cases. The same rule applies to connecting plumbing and wiring.

## 12.3 PITOT & STATIC SYSTEMS

Refer to Figures 48 and 49.

The pitot system conveys ram air pressure to the airspeed indicator. The static system vents vertical speed indicator (if fitted), altimeter and airspeed indicator to atmospheric pressure through plastic tubing connected to a static port.

### 12.3.1 PITOT – STATIC SYSTEM MAINTENANCE

Proper maintenance of pitot and static system is essential for proper operation of the altimeter, airspeed indicator and vertical speed indicator (if fitted). Leaks, moisture and obstructions in the pitot system will result in false airspeed indications, while static system malfunctions will affect readings of all three instruments. Cleanliness and security are the principal rules for system maintenance. The pitot tube and static ports **MUST** be kept clean and unobstructed.

### 12.3.2 STATIC PRESSURE SYSTEM INSPECTION & LEAKAGE TEST

The following procedure outlines inspection and testing of the static pressure system, assuming that the altimeter has been tested and inspected in accordance with the current Regulations.

1. Ensure the static system is free from entrapped moisture and restrictions.
2. Ensure no alternations of airframe surface have been made which would effect the relationship between air pressure in the static pressure system and true ambient static air pressure for any flight configuration.
3. Attach a source of suction to static pressure source opening. Figure 50 shows one method of obtaining suction.
4. Slowly apply suction until the altimeter indicates a 1000-foot increase in altitude.



### **CAUTION**

**When applying or releasing suction, do not exceed the range of either vertical speed indicator or airspeed indicator.**

5. Cut off suction source to maintain a “closed” system for one minute. Leakage shall not exceed 100 feet altitude loss as indicated on the altimeter.
6. If leakage rate is within tolerance, slowly release suction source.

### **NOTE:**

If leakage rate exceeds maximum allowable, first tighten all connections, then repeat leakage test. If leakage rate still exceeds maximum allowable use the following procedure:

1. Disconnect static pressure lines from airspeed indicator and vertical speed indicator.
2. Use suitable fittings to connect lines together so that the altimeter is the only instrument still connected into the static pressure system.
3. Repeat leakage test to check whether static pressure system or the bypassed instruments are the cause of the leakage. If instruments are at fault, they must be repaired by an “appropriately authorised repair station”, or replaced. If static pressure system is at fault, use the following procedure to locate the leakage.
4. Attach a source of positive pressure to the static source opening. Figure 50 shows one method of obtaining positive pressure.

### **CAUTION**

**Do not apply positive pressure with airspeed indicator or vertical speed indicator connected to the static pressure system.**

5. Slowly apply positive pressure until altimeter indicates a 500-foot decrease in altitude and maintain this altimeter indication while checking for leaks. Coat line connectors and static source flange with solution of mild soap and water, watching for bubbles to locate leaks.
6. Tighten leaking connections. Repair or replace parts found to be defective.
7. Reconnect airspeed and vertical speed indicators into static pressure systems and repeat leakage test steps 3 through 6.

### **12.3.3 PITOT SYSTEM INSPECTION & LEAKAGE TEST**

To check pitot system for leaks, place a piece of rubber or plastic tubing over pitot tube, close opposite end of tubing and slowly roll up tube until airspeed indicator registers in the cruise range. Secure tube and after a few minutes recheck airspeed indicator. Any leakage will have reduced the pressure in the system, resulting in a lower airspeed indication. Slowly unroll tubing before removing it, so pressure may be released gradually.



Otherwise instrument may be damaged. If the test reveals a leak in the system, check all connections for tightness.

#### 12.3.4 BLOWING OUT LINES

Condensation may collect at points in the pitot system and produce a partial obstruction. To clear line, disconnect airspeed indicator. Using low pressure air, blow from indicator end of line toward pitot tube.

### **CAUTION**

**Never blow through pitot or static lines towards the instruments.**

Like pitot lines, static lines may be kept clear and connections tight. When necessary, disconnect static line at first instrument to which it is connected, then blow line clear with low pressure air. Check all static pressure lines for tightness. If hose or hose connections are used, check for general condition and clamps for security. Replace hose which has cracked, hardened or shows signs of deterioration.

#### 12.3.5 REMOVAL & INSTALLATION OF COMPONENTS

To remove pitot mast, remove the two rivets fastening it to the wing strut and pull it out from the strut far enough to disconnect the pitot line.

The static mast is fixed and cannot be removed. To gain access to disconnect the static tube from the static mast remove the VHF antenna cover at the top of the fin. Pitot and static tubing is removed in the usual manner.

Installation of tubing will be simplified if a guide wire is drawn in as the tubing is removed. When replacing tubing and fittings, tighten connections firmly, but avoid overtightening and distortion of fittings or tubing.

#### 12.3.6 TROUBLE SHOOTING – PITOT STATIC SYSTEM

Table 9. Trouble Shooting – Pitot-Static System

Trouble	Probable Cause	Remedy
Low or sluggish airspeed indication (normal airspeed and vertical speed)	Pitot tube obstructed, leak or obstruction in pitot line	Test pitot tube and line for leaks or obstructions. Blow out tube and line, repair or replace damaged line.
Incorrect or sluggish response (all 3 instruments)	Leaks or obstruction in static line	Test line for leaks and obstructions. Repair or replace line, blow out obstructed line.

### 12.3.7 TROUBLE SHOOTING – AIRSPEED INDICATOR

Table 10. Trouble Shooting – Airspeed Indicator

Trouble	Probable Cause	Remedy
Hand fails to response	Pitot pressure connection not properly connected to pressure line from pitot tube	Test line and connections for leaks. Repair or replace damaged line, tighten connections
	Pitot or static lines clogged	Check line for obstructions. Blow out lines.
Incorrect indication or hand oscillates	Leak in pitot or static lines	Test lines and connections for leaks. Repair or replace damaged lines, tighten connections.
	Defective mechanism or leaking diaphragm	Substitute known-good indicator and check reading. Replace instrument.
Hand vibrates	Excessive vibration	Check panel shock mounts. Replace defective shock mounts
	Excessive tubing vibration	Check clamps and line connections for security. Tighten clamps and connections, replace tubing with flexible hose.

### 12.3.8 TROUBLE SHOOTING – ALTIMETER

Table 11. Trouble Shooting – Altimeter

Trouble	Probable Cause	Remedy
Instrument fails to operate	Static line plugged	Check line for obstructions. Blow out lines
	Defective mechanism	Substitute known-good altimeter and check reading. Replace instrument
Incorrect indication	Hands not carefully set	Reset hands with knob
	Leaking diaphragm	Substitute known-good altimeter and check reading. Replace instrument.
	Pointers out calibration	Compare reading with known-good altimeter. Replace instrument
Hand oscillates	Static pressure irregular	Check lines for obstruction or leaks. Blow out lines, tighten connections.



Trouble	Probable Cause	Remedy
	Leak in airspeed or vertical speed indicator installations	Check other instruments and system plumbing for leaks. Blow out lines, tighten connections

### 12.3.9 TROUBLE SHOOTING – VERTICAL SPEED INDICATOR (OPTION)

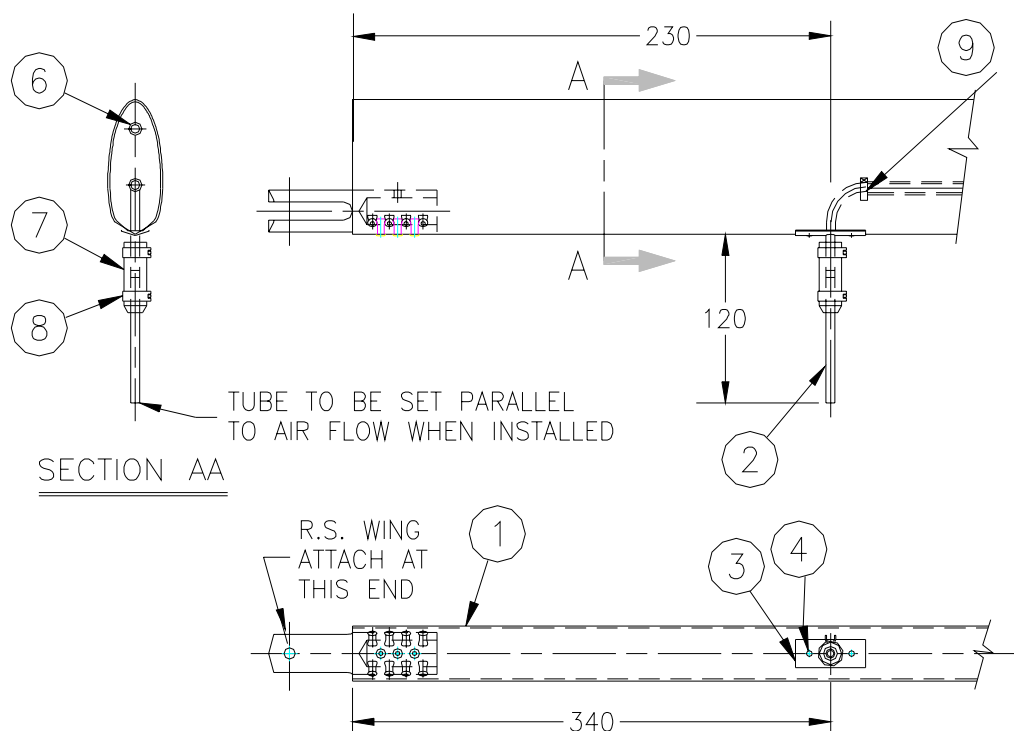
Table 12. Trouble Shooting – Vertical Speed Indicator (Option)

Trouble	Probable Cause	Remedy
Instrument fails to operate	Static line plugged	Check line for obstructions. Blow out lines.
	Static line broken	Check line for damage, connections for security. Repair or replace damaged line, tighten connections.
Incorrect indication	Partially plugged static line	Check line for obstructions. Blow out lines
	Ruptured diaphragm	Substitute known-good indicator and check reading. Replace instrument
	Pointer off zero	Reset pointer to zero
Pointer oscillates	Partially plugged static line	Check line for obstructions. Blow out lines
	Leak in static line	Test lines and connections for leaks. Repair or replace damaged lines, tighten connections.
	Leak in instrument case	Substitute known-good indicator and check reading. Replace instrument.
Hand vibrates	Excessive vibration	Check shock mounts. Replace defective shock mounts.
	Defective diaphragm	Substitute known-good indicator and check for vibration. Replace instrument.

### 12.3.10 PITOT TUBE ALIGNMENT

Refer to Figure 48

For correct airspeed indication, pitot tube must be properly aligned. Open end of tube must be perpendicular to longitudinal axis of the aircraft. Refer to Figure 48 for alignment details.



9	50449N	TUBE BENT PITOT	1
8		HOSE CLAMP *MS8242	2
7	504439N	HOSE COUPLING	1
6	PV0029N	PVC TUBE 1/4" ID	1
			1
4	PH0029N	RIVET	2
3	504429N	MOUNT PLATE PITOT TUBE	1
2	504419N	TUBE STRAIGHT PITOT	1
1	2000093	WING STRUT ASSY	1
ITEM	PART No.	DESCRIPTION	QTY.

Drawing 9024094/2 PITOT ASSEMBLY

**Figure 45. Pitot Assembly**



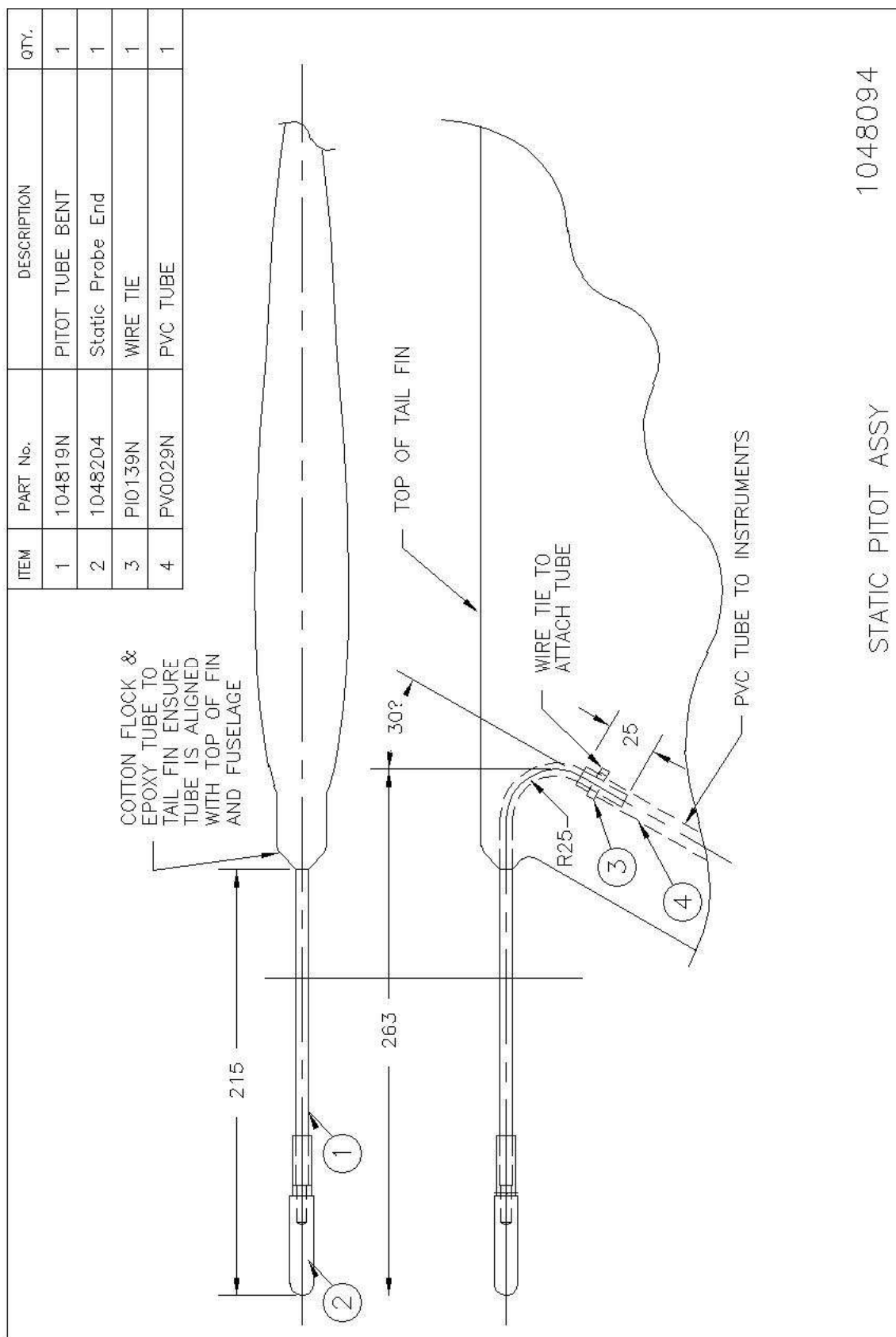
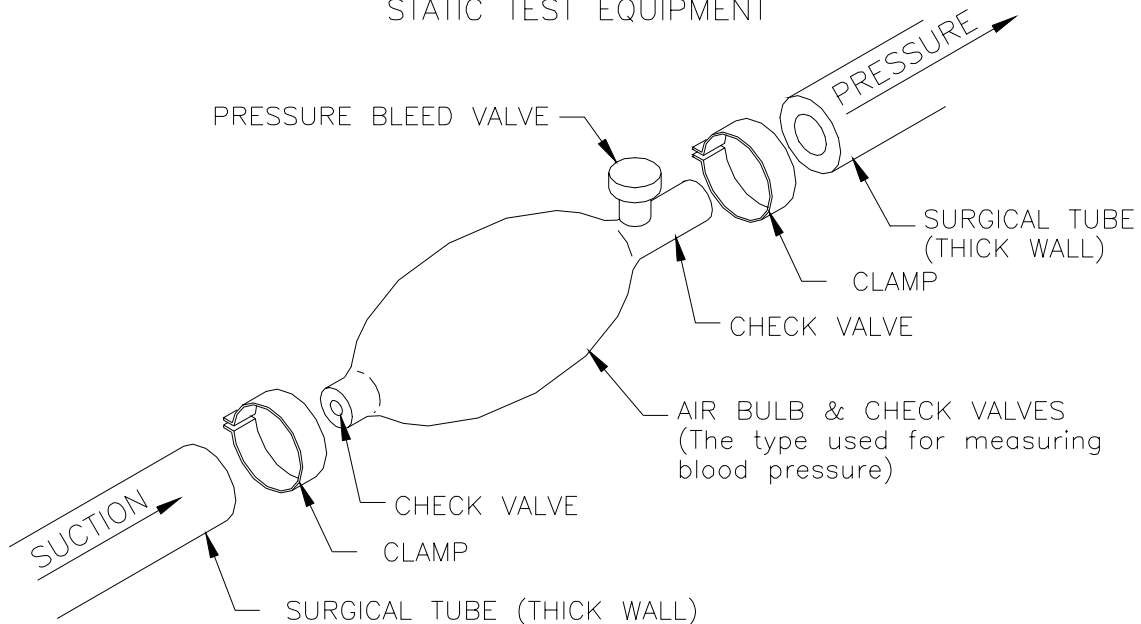


Figure 46. Static Probe System Assembly

## STATIC TEST EQUIPMENT



## TO APPLY SUCTION:—

- 1: Squeeze air bulb to expel as much air as possible
- 2: Hold suction hose firmly against static pressure tube opening
- 3: Slowly release air bulb to obtain desired suction, then pinch hose tightly to maintain suction in the system
- 4: After leak test, slowly release suction by allowing a small amount of air into static system, wait for vertical speed indicator to return to zero, and repeat as required.

## TO APPLY PRESSURE:—

CAUTION: DO NOT APPLY PRESSURE WITH AIRSPEED INDICATOR OR VERTICAL SPEED INDICATOR CONNECTED TO STATIC SYSTEM

- 1: Hold pressure hose firmly against static pressure tube opening
- 2: Slowly squeeze air bulb to apply desired pressure to static system
- 3: Release pressure slowly by opening bleed valve

Drawing 9017093/1 STATIC TEST EQUIPMENT

**Figure 47. Static System Test**

## 12.4 TACHOMETER

The tachometer is electronic and driven from a magnetic pick up. Should the tachometer fail to operate:

1. Check 10amp instrument fuse and replace if necessary.
2. Check 30amp main fuse and replace if necessary.



3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.
4. Check wiring (see Wiring Diagram Figure 51).
5. Check correct installation of magnetic sensor on engine (Refer to engine Instruction & Maintenance Manual)

Should the instrument give incorrect readings:

1. Check 10amp instrument fuse and replace if necessary.
2. Check 30amp main fuse and replace if necessary.
3. Check correct installation of magnetic sensor on engine (Refer to engine Instruction & Maintenance Manual)
4. Refer to an Authorised Service Centre to have Alternator and Regulator checked.
5. Refer instrument to VDO Service Centre or JABIRU AIRCRAFT Pty Ltd for inspection and possible repair.

## 12.5 OIL PRESSURE GAUGE

The Oil Pressure Gauge is an electronic instrument. Should the instrument fail to operate:

1. Check 10amp instrument fuse and replace if necessary.
2. Check 30amp main fuse and replace if necessary.
3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.
4. Check wiring at Sender for security.
5. Replace Sender.
6. Replace Gauge.

## 12.6 OIL TEMPERATURE GAUGE

The Oil Temperature Gauge is an electronic instrument. Should the instrument fail to operate:

1. Check 10amp instrument fuse and replace if necessary.
2. Check 30amp main fuse and replace if necessary.
3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.



4. Check wiring at Sender for security.
5. Replace Sender.
6. Replace Gauge.

## 12.7 CYLINDER HEAD TEMPERATURE GAUGE

The Cylinder Head Temperature Gauge is a Thermo-couple instrument and is not connected to the aircraft electrical system. See Wiring Diagram Figure 51. Should the instrument fail to operate:

1. Check for loose terminal connections and damage to wiring.
2. Replace thermo-couple.
3. Replace Gauge.

## 12.8 EXHAUST GAS TEMPERATURE GAUGE (OPTION)

The Exhaust Gas Temperature Gauge is a Thermo-couple instrument and is not connected to the aircraft electrical system. See Wiring Diagram Figure 51. Should the instrument fail to operate:

1. Check for loose terminal connections and damage to wiring.
2. Replace thermo-couple.
3. Replace Gauge.

## 12.9 HOURMETER

The Hourmeter is an electronic instrument. An optional Airspeed Switch may be fitted. Should the instrument fail to operate:

1. Check 10amp instrument fuse and replace if necessary.
2. Check 30amp main fuse and replace if necessary.
3. Remove Instrument Panel (see Paragraph 13.2.3) and check cable terminals for security.
4. Replace Gauge.

## 12.10 MAGNETIC COMPASS

The Magnetic Compass is liquid-filled, with expansion provisions to compensate for temperature changes. It is equipped with compensating magnets adjustable from the front of the case. No maintenance is required on the compass except an occasional check on a compass rose for adjustment and compensation.



## 12.11 GYRO INSTRUMENT PACKAGE (OPTION)

A vacuum pump driven Artificial Horizon and Directional Gyro, together with an electric Turn Coordinator, is available as an option.

Where this option is provided, a different instrument panel facia is fitted.

Repair should only be performed by an approved instrument workshop.



## 13 SECTION 14 – ELECTRICAL SYSTEMS

### 13.1 ELECTRICAL POWER SUPPLY SYSTEM

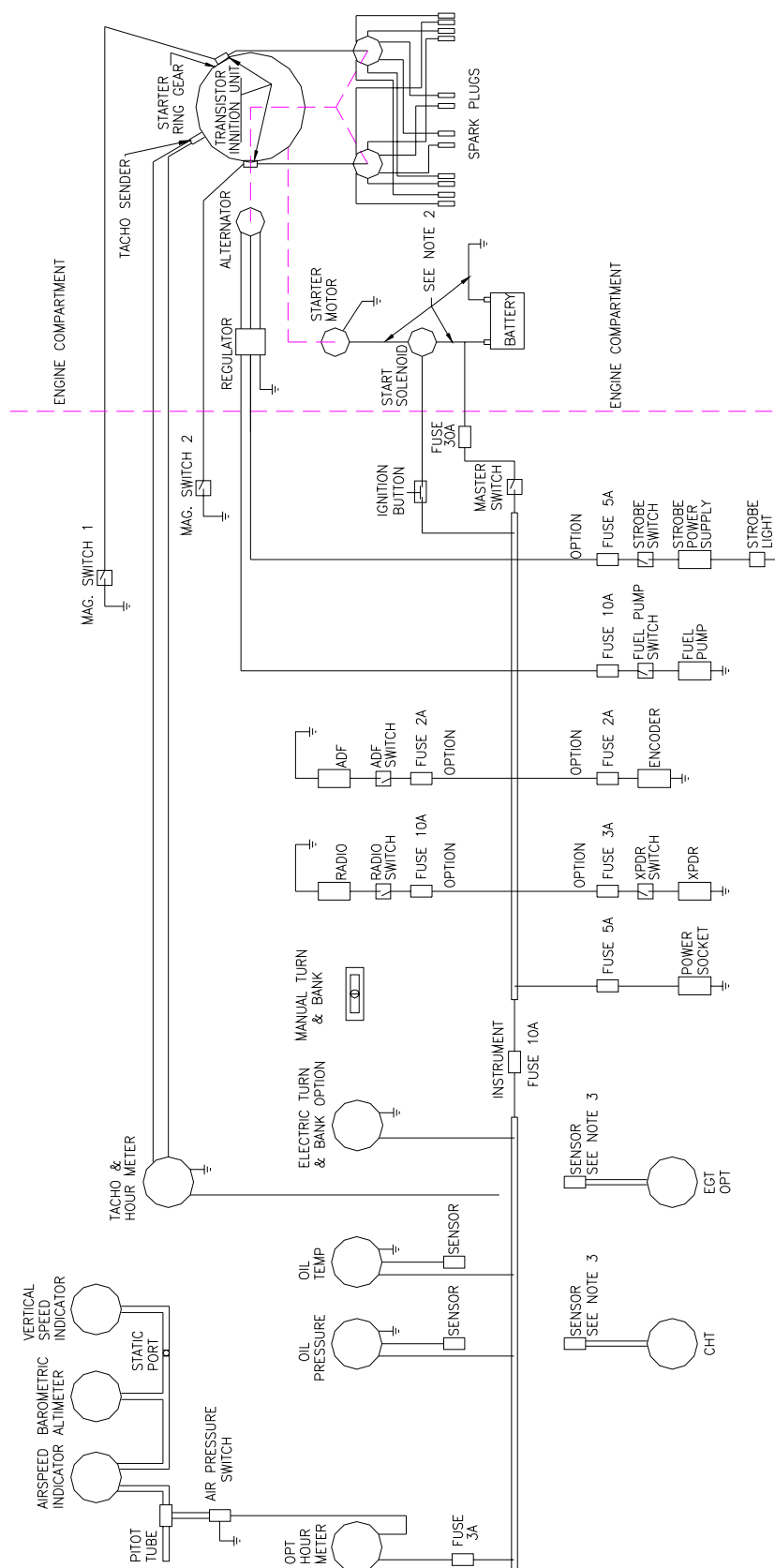
Electrical energy for the aircraft is supplied by a 14 volt, direct-current, single-wire, negative ground electrical system. A 12-volt battery supplies power for starting and furnishes a reserve source of power in the event of electrical power system failure. An engine-driven Alternator is the normal source of power during flight and maintains a battery charge controlled by a voltage regulator.

The following paragraphs provide brief descriptions of the elements of the electrical system. They should be read in conjunction with the Wiring Diagram at Figure 51.

### 13.2 WIRING DIAGRAM

The Wiring Diagram is shown at Figure 51.





Drawing 4119234/3 ELECTRICAL WIRING 3300

Figure 48. Wiring Diagram



### 13.3 BUS BARS

Electrical power for electrical equipment and installations is supplied through Bus Bars. The bus bars are mounted at the rear of the lower instrument panel. Access is gained by removing the main instrument panel (see Paragraph 13.2.3).

#### 13.3.1 MASTER SWITCH

When using a key switch, the Master Switch activates a relay which in turn powers the bus bars. When using a toggle switch, it activates the power direct from the battery.

Refer to Wiring Diagram at Figure 51.

### 13.4 BATTERY POWER SYSTEM

Refer also to Wiring Diagram at Figure 51.

#### 13.4.1 BATTERY

The battery is 12-volts and approximately 20 ampere-hour capacity. The battery is mounted in the engine compartment and is vented overboard.

#### 13.4.2 BATTERY TROUBLE SHOOTING

Trouble Shooting is limited to inspection of wiring and terminals, battery charge condition and battery solenoid.

#### 13.4.3 REMOVAL AND INSTALLATION

1. Disconnect the battery security strap.
2. Disconnect battery drain.
3. Disconnect the ground cable from the negative battery terminal (black insulation).

### **WARNING**

**When installing or removing battery, always observe the proper polarity with the aircraft electrical system (negative to ground). Reversing the polarity, even momentarily, may result in failure of semi-conductor devices (alternator diodes, radio protection diodes and radio transistors).**

4. Disconnect the cable from the positive battery terminal.
5. Lift the battery out of the battery box.
6. To replace the battery, reverse this procedure.

#### 13.4.4 CLEANING THE BATTERY

For maximum efficiency the battery and connections should be kept clean at all times.

1. Remove the battery and connections in accordance with the preceding paragraph.



2. Wipe the battery cable ends, battery terminals and the entire surface of the battery with a clean cloth moistened with a solution of bicarbonate of soda (baking soda) and water.
3. Rinse with clear water, wipe off excess water and allow battery to dry.
4. Brighten up cable ends and battery terminals with emery cloth or a wire brush.
5. Install the battery in accordance with the preceding paragraphs.
6. Coat the battery terminals with petroleum jelly or an ignition spray product to reduce corrosion.

#### 13.4.5 BATTERY BOX

The battery box is located on the firewall in the engine compartment.

#### 13.5 STARTER SOLENOID

The starter solenoid is a sealed unit. Service is limited to inspection of terminals for security and replacement of the unit.

#### 13.6 VOLTAGE REGULATOR

The voltage regulator is a sealed unit. Service is limited to inspection of terminals for security and replacement of the unit.

#### 13.7 STROBE SYSTEM (OPTION)

A white strobe light may be installed in the rear lower fuselage or in the cabin roof. The power source for the strobe light is located behind the fuel tank.

### **WARNING**

**The strobe system is a high-voltage device. Do Not remove or touch tube assembly while in operation. Wait at least 5 minutes after turning off power before commencing any activity near the strobe light.**

#### 13.8 ELECTRICAL LOAD ANALYSIS

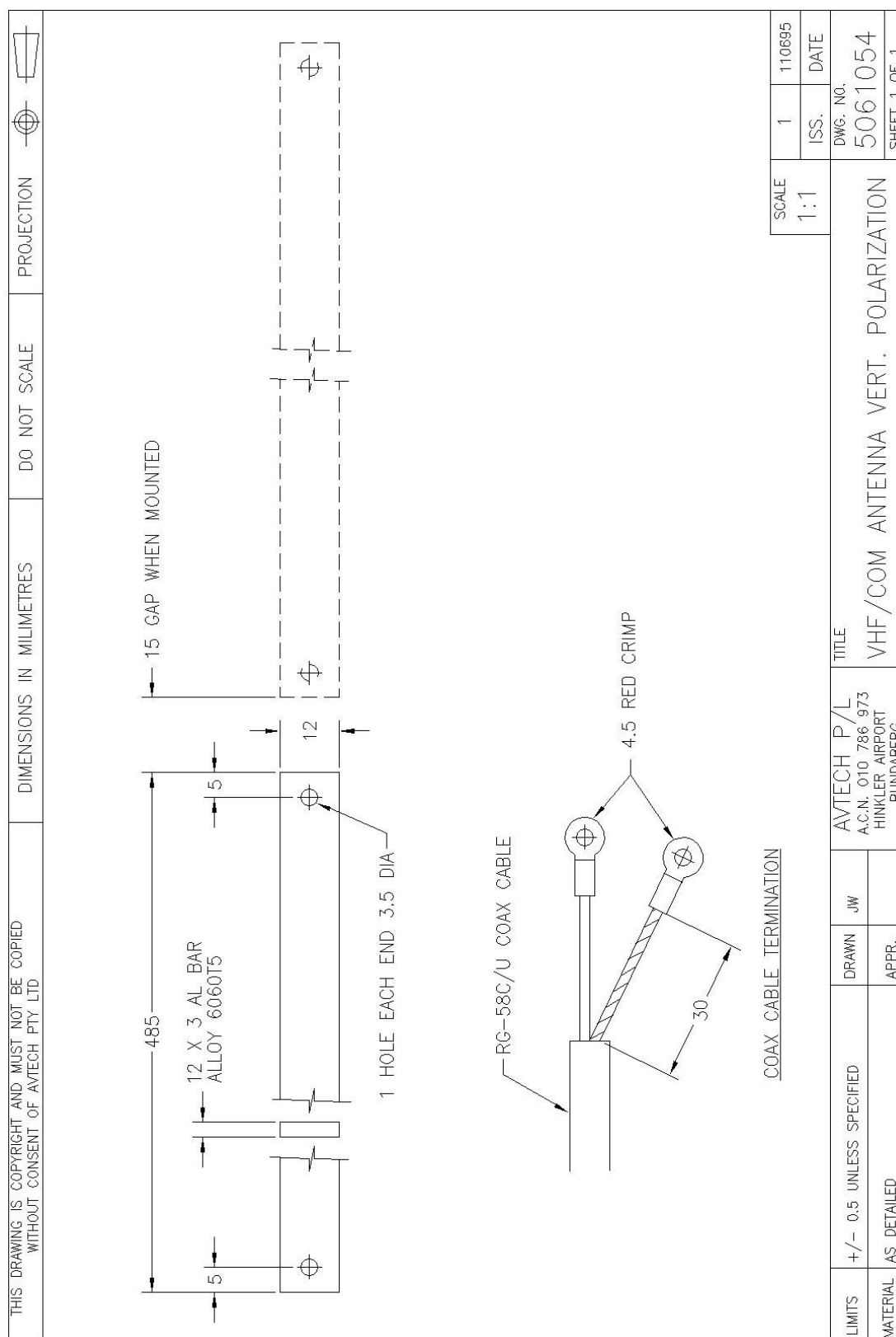
As this aircraft is only certified for VFR Daylight only operations, an Electrical Load Analysis is not required as failure of the electrical generation system would have a limited effect on the length of time of radio transmissions and no effect on aircraft performance as the engine electrical system is totally isolated from the power supply and is self-sustaining. The battery is only used to crank the engine for starting.

#### 13.9 RADIO WIRING DIAGRAM (OPTION)

The optional aircraft radio system diagram is provided with the radio manuals.

##### 13.9.1 VHF ANTENNA INSTALLATION

The VHF antenna used consists of two aluminium bars permanently bonded in place inside the spar channel of the vertical fin. Figure 49 shows the position details of the two bars.



### Figure 49. VHF Antenna Installation



## 14 SECTION 15 – PAINTING & FINISHING

### 14.1 INTERIOR

The interior is painted with BERGER Matt Vinyl – Standard colour is Fumosus A154 – Grey.

### 14.2 EXTERIOR

#### 14.2.1 PAINTING

The following painting procedure, as used at the Jabiru factory, had proven successful in ensuring good presentation of the aircraft.

2-part paint should be used for best results. Due to the variation between different paints, we recommend carefully following the pack recommendations relating to surface preparation and safety.

Use a bare minimum of undercoat, preferably white or cream, and topcoat to keep weight down.

If you have had no previous painting experience, a short course may be available from TAFE.

#### NOTE:

It is very easy to dramatically increase the weight of the aircraft with a heavy paint job. Care must be taken to use the absolute minimum amounts of filler, undercoat and topcoat. Certain brands of filler are significantly lighter than others – checking densities and using lighter materials can save around 5kg on a typical Jabiru airframe.

#### 14.2.2 MATERIALS RECOMMENDED

##### 14.2.2.1 PAINTS / FILLERS

- |                    |           |                                     |
|--------------------|-----------|-------------------------------------|
| • Top Coat         | 5 Lts     | MUST BE WHITE                       |
| • Base Coat        | 4 Lts     | Ensure compatibility with top coat. |
| • Polyester Filler | 4 kg      |                                     |
| • Spot Putty       | 1 lb tube | Claw Glaze recommended              |

##### 14.2.2.2 SANDPAPER

Note: aluminum oxide type most effective

- |                     |          |             |
|---------------------|----------|-------------|
| • 1st all over sand | 150 grit | 20 3M Brand |
| • Bog Sand          | 120 grit | 20 3M Brand |
| • Spot Putty Sand   | 180 grit | 20 3M Brand |
| • Final Sand        | 320 grit | 20 3M Brand |

#### 14.2.3 PAINTING EQUIPMENT REQUIRED

- Random Orbital Sander (approximately A\$70.00)
- Gas Mask
- Compressor



- Spray Gun

#### 14.2.4 PAINTING PROCEDURE:

1. Wash all parts to remove release agent.

*Note: Prepare all parts separately and paint separately.*

2. Completely sand all outside surface area with 150 grit to give paint adhesion. The factory uses a Random Orbital Sander and 150mm Stickit discs.

*Note: Ensure that glass is not cut into in the sanding process*

3. Grind excess resin from joints being careful not to grind into fiberglass layers. Take care not to grind into the horn of any control surfaces.

4. A clean wire brush is used to search out any crab holes or pinholes. Give the entire aircraft a good scrub all over especially around corners etc.

5. Wear a breathing respirator with painting cartridges right from initial sanding through to painting.

*Hint: Body Filler sets quickly in high temperatures particularly when larger mixes are necessary. Use cold packs under the Body Filler board to extend setting time.*

6. Follow instructions carefully and experiment with setting times.

7. On large radius (e.g. sides of fuselage) an extra large homemade spatula (9" thin tin plate) is very handy when applying Body Filler.

8. When filling up to window edges, grind chamfer onto edge of window to give depth for bog adhesion.

### **WARNING**

**THE GEL COAT IS MICRO THIN, SO SANDING IS ALWAYS A CAREFUL PROCEDURE. IF GEL COAT IS INADVERTENTLY PENETRATED DO NOT CONTINUE SANDING INTO STRUCTURAL GLASS.**

9. With the surface satisfactorily prepared white primer is required only on the discolored areas (i.e. Body Filled areas). Pin holes become evident after the primer is applied so use "spot putty" to fill. Be careful and meticulous to find all pin holes because primer and top coat will not fill holes.

10. Your final product can only be as good as your preparation. Remember, paint does NOT cover a multitude of sins.

11. The factory uses a low-pressure pot gun for spraying at pressures from 60-100 psi.

12. It is mandatory that exterior color is WHITE only broken if desired, by pin strips on the vertical surfaces (i.e. Sides of fuselage) but not horizontal surfaces (i.e. top of wings or fuselage) as the heat build up under the tape in hot sun is considerable.

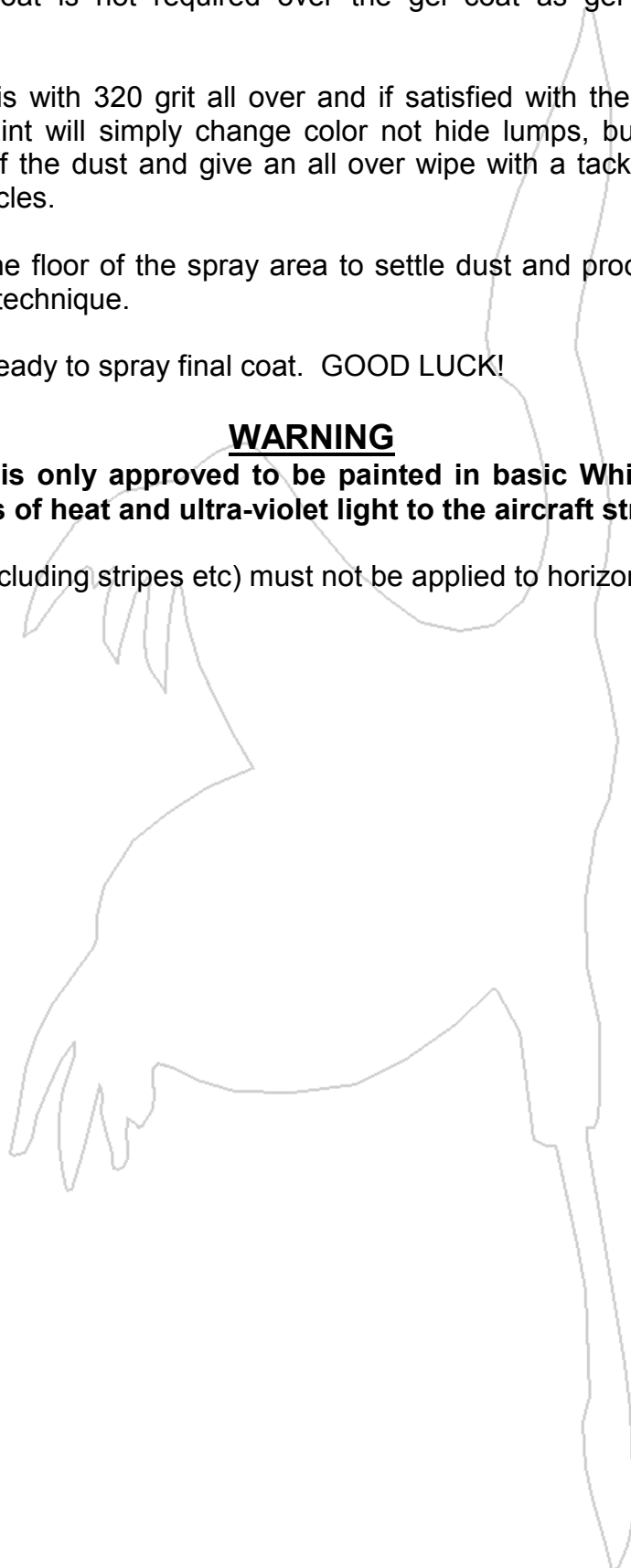


13. After filling all pinholes spray another coat of primer on the discolored areas. An all over primer coat is not required over the gel coat as gel coat is a sufficient undercoat.
14. The final rub is with 320 grit all over and if satisfied with the surface preparation (remember paint will simply change color not hide lumps, bumps, scratches and holes) blow off the dust and give an all over wipe with a tack cloth to pick up the final dust particles.
15. Wash down the floor of the spray area to settle dust and proceed to spray as per your selected technique.
16. You are now ready to spray final coat. GOOD LUCK!

### **WARNING**

**The Jabiru aircraft is only approved to be painted in basic White colour, so as to minimise the effects of heat and ultra-violet light to the aircraft structure.**

In addition, colour (including stripes etc) must not be applied to horizontal, upper surfaces.



## 15 SECTION 16 - PALCARDS


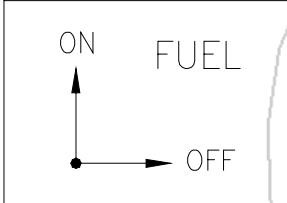
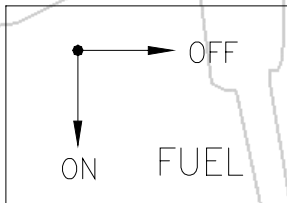
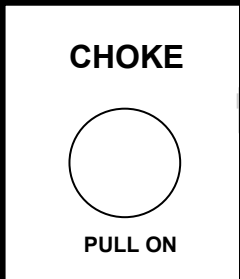
### 15.1 COCKPIT PLACARDS GENERAL

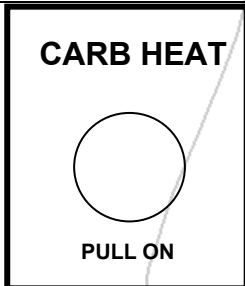
Table 13. General Cockpit Decals

Decal Detail	Preview
J160 Warning Placard P/No 5A011A0D	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p><b>WARNING</b></p> <ul style="list-style-type: none"> <li>• Users of this aircraft do so at their own risk.</li> <li>• This aircraft must be flown in accordance with the Owners Manual</li> <li>• Aerobatics, including spins are PROHIBITED</li> <li>• Smoking is PROHIBITED</li> <li>• Noise level at full power exceeds 95 dB(A). Ear protection should be worn.</li> </ul> <p>AIRCRAFT KIT TYPE: JABIRU J160 Designed &amp; Manufactured in Australia by JABIRU AIRCRAFT PTY. LTD. BUNDABERG, QLD 4670</p> </div> <p>Fitted on the rear Face of the Forward Wing Spar Carry-through Beam in the Cabin Ceiling.</p>
J170 Warning Placard P/No 5A015A0D	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p><b>WARNING</b></p> <ul style="list-style-type: none"> <li>• Users of this aircraft do so at their own risk.</li> <li>• This aircraft must be flown in accordance with the Owners Manual</li> <li>• Aerobatics, including spins are PROHIBITED</li> <li>• Smoking is PROHIBITED</li> <li>• Noise level at full power exceeds 95 dB(A). Ear protection should be worn.</li> </ul> <p>AIRCRAFT KIT TYPE: JABIRU J170 Designed &amp; Manufactured in Australia by JABIRU AIRCRAFT PTY. LTD. BUNDABERG, QLD 4670</p> </div> <p>Fitted on the rear Face of the Forward Wing Spar Carry-through Beam in the Cabin Ceiling.</p>
Owners Manual P/No 5036194	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>FLIGHT/OWNERS MANUAL</b></p> </div> <p>Fitted to Inside of RH Door above the Door Pocket.</p>
Door Open LHS P/No 5027094	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>← <b>OPEN</b></p> </div> <p>Fitted to the Outsides of LH Door Above the Door Catch Lever</p>
Door Open RHS P/No 5028094	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>OPEN</b> →</p> </div> <p>Fitted to the outside of RH Door Above the Door Catch Level</p>
Door String Placard P/No 5026094	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>PULL TO OPEN</b></p> </div> <p>Fitted on Inside of both Doors Above Door Handle.</p>
Fuel Contents	<p>Fitted to sight glasses of wing fuel tanks.</p>

## 15.2 COCKPIT CONTROL DECALS



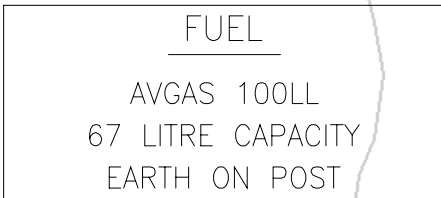

Table 14. Cockpit Control Decals

Decal Detail	Preview
Loading Limitations P/No 5098894	<div> <p><u>LOADING LIMITATIONS</u></p> <ol style="list-style-type: none"> <li>1. Maximum Gross weight of aircraft is not to exceed 540 kg.</li> <li>2. All baggage must be stowed either on the passenger seat, or in the compartment behind the rear of the seats.</li> <li>3. ADEQUATELY SECURE ALL ITEMS</li> <li>4. Pilots must use Load &amp; Trim Sheet given in Section 6 of the Flight Manual to check trim before flight.</li> </ol> </div> <p>Fit to right side of fuselage between window and beam.</p>
Trim Position P/No5024094	<div> <p>             NOSE DOWN      NEUTRAL TRIM      NOSE UP      BRAKE ON           </p>  </div> <p>Fitted on the Top of the Main Beam Beside the trim control</p>
Fuel Tap Position P/No 502319N	<div>  </div> <p>Fitted on the Main Beam in front of the Fuel SELECTOR Valve</p>
Fuel Tap Position P/No 502329N	<div>  </div> <p>Fitted on the rear of the fuselage beam next to the wing tank valves</p>
Choke Cable P/No5051094	<div> <p><b>CHOKE</b></p>  <p><b>PULL ON</b></p> </div>

Decal Detail	Preview
	Fitted at the base of the choke cable.
Carby Heat P/No 5026194	 <p>Fitted at the base of the CARBY Heat Cable.</p>

## 15.3 EXTERNAL FUSELAGE

Table 15. External Fuselage Decals

Decal Detail	Preview
Static Port (P/No 5043094)	 <p>Attach to LHS of Vertical Fin in line with Static Tube</p>
Electrical Earthing P/No 5078064	 <p>Attach above the Earthing Pole adjacent to the Fuel Filler Cap.</p>
Fuel Grade P/No 5091344  2 OFF	 <p>Attach to top skin of wing adjacent to Fuel Filler Cap.</p>
Wing Bolt Tightening P/No 5039094 Qty 8 Required	 <p>Attach to the fuselage and wings beside each wing, and lift strut attachment fitting.</p>



## 16 APPENDIX I - JABIRU 2200 ENGINE

Appendix 1 of this Manual is the Instruction and Maintenance Manual for the Jabiru 2200 engine.

Please insert your copy of the INSTRUCTION AND MAINTENANCE MANUAL that comes with your engine into this section if you are printing this out.

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## 17 APPENDIX II - JABIRU ENGINE PARTS BOOK

Please insert your copy of the INSTRUCTION AND MAINTENANCE MANUAL that comes with your engine into this section.

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## 18 APPENDIX III – ENGINE INSTALLATION MANUAL

Please insert your copy of the INSTALLATION MANUAL that comes with your engine into this section.

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## 19 APPENDIX IV – PROPELLER SERVICE MANUAL

### 19.1 APPROVED INSTALLATIONS

The following combinations are approved.

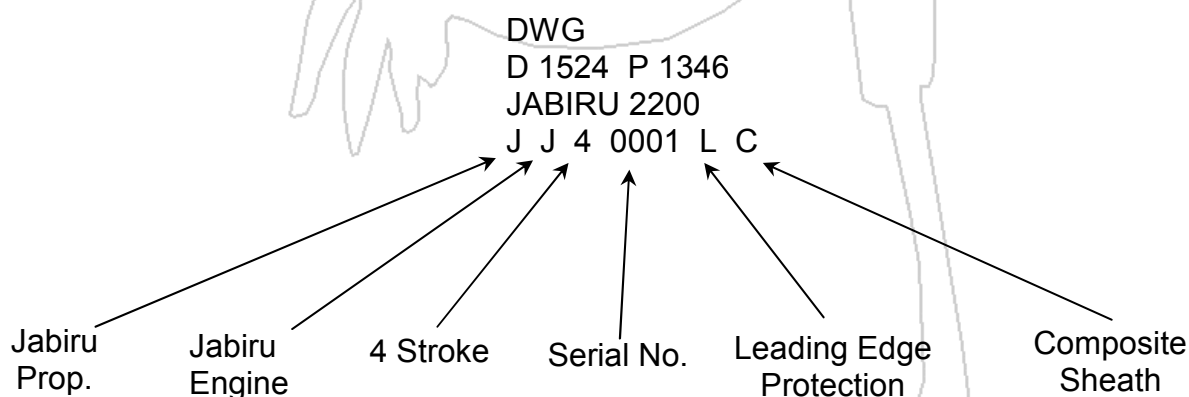
Table 16. Approved Propeller Installations

Airframe	Engine	Propeller	Dia x Pitch	Remarks/Limits
Jabiru J160	Jabiru 2200	C000	1524 x 1117 (60" x 44")	Not above 3300 RPM
Jabiru J160-C	Jabiru 2200	C000	1524 x 1067 (60" x 42")	Not above 3300 RPM
Jabiru J170	Jabiru 2200	C000	1524 x 1117 (60" x 44")	Not above 3300 RPM
Jabiru J170-SP	Jabiru 2200	C000	1524 x 1067 (60" x 42")	Not above 3300 RPM
Jabiru J170-SPC	Jabiru 2200	C000	1524 x 1067 (60" x 42")	Not above 3300 RPM
Jabiru J170-UL	Jabiru 2200	C000	1524 x 1117 (60" x 44")	Not above 3300 RPM

### 19.2 IDENTIFICATION STAMPINGS

Each propeller is marked with the particulars indicated below:

1. The Propeller Drawing No.
2. The diameter and pitches in metres, proceeded by the letters "D" and "P" respectively.
3. The type of engine for which the propeller has been designed.
4. Manufacturing Serial No.



### 19.3 DESCRIPTION

The Propellers are constructed from 3 laminations of approved species timber and are manufactured in accordance with the relevant approved Drawing. They are single piece 2 blade propellers with an inlaid leading edge (urethane).



The propeller finish is a composite sheath, and clear epoxy paint (JABIRU Part No. PP0039N).

### **WARNING**

*In countries other than Australia, different registration requirements will apply. It is the owner's responsibility to become fully aware of the particular maintenance requirements and limitations applicable to the appropriate registration.*

### **WARNING**

**ENSURE IGNITION SYSTEM IS "OFF" BEFORE COMMENCING ANY WORK ON PROPELLER.**

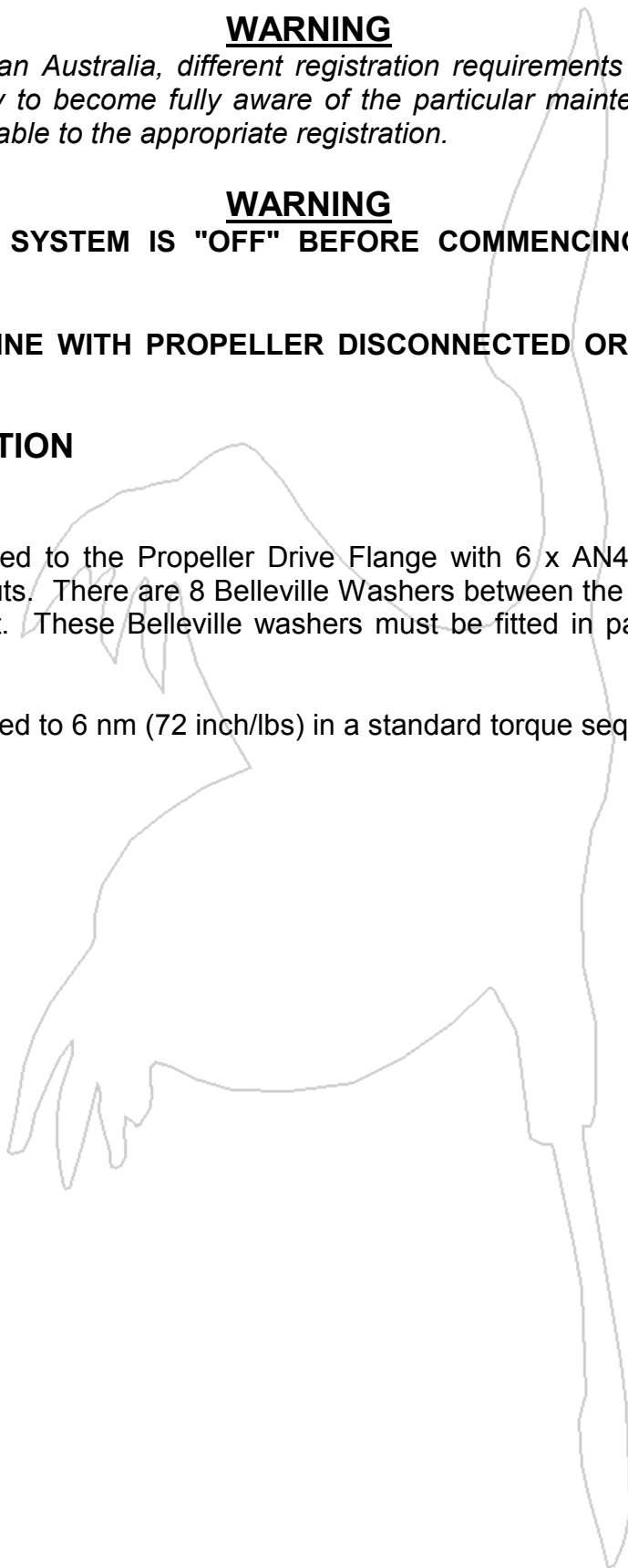
**DO NOT RUN ENGINE WITH PROPELLER DISCONNECTED OR ENGINE DAMAGE WILL RESULT.**

## **19.4 INSTALLATION**

Refer to Figure 52.

The Propeller is bolted to the Propeller Drive Flange with 6 x AN4 aircraft grade bolts attaching to Nyloc Nuts. There are 8 Belleville Washers between the Aluminium Propeller Flange and each nut. These Belleville washers must be fitted in pairs as shown in the attached drawing.

Bolts should be torqued to 6 nm (72 inch/lbs) in a standard torque sequence.



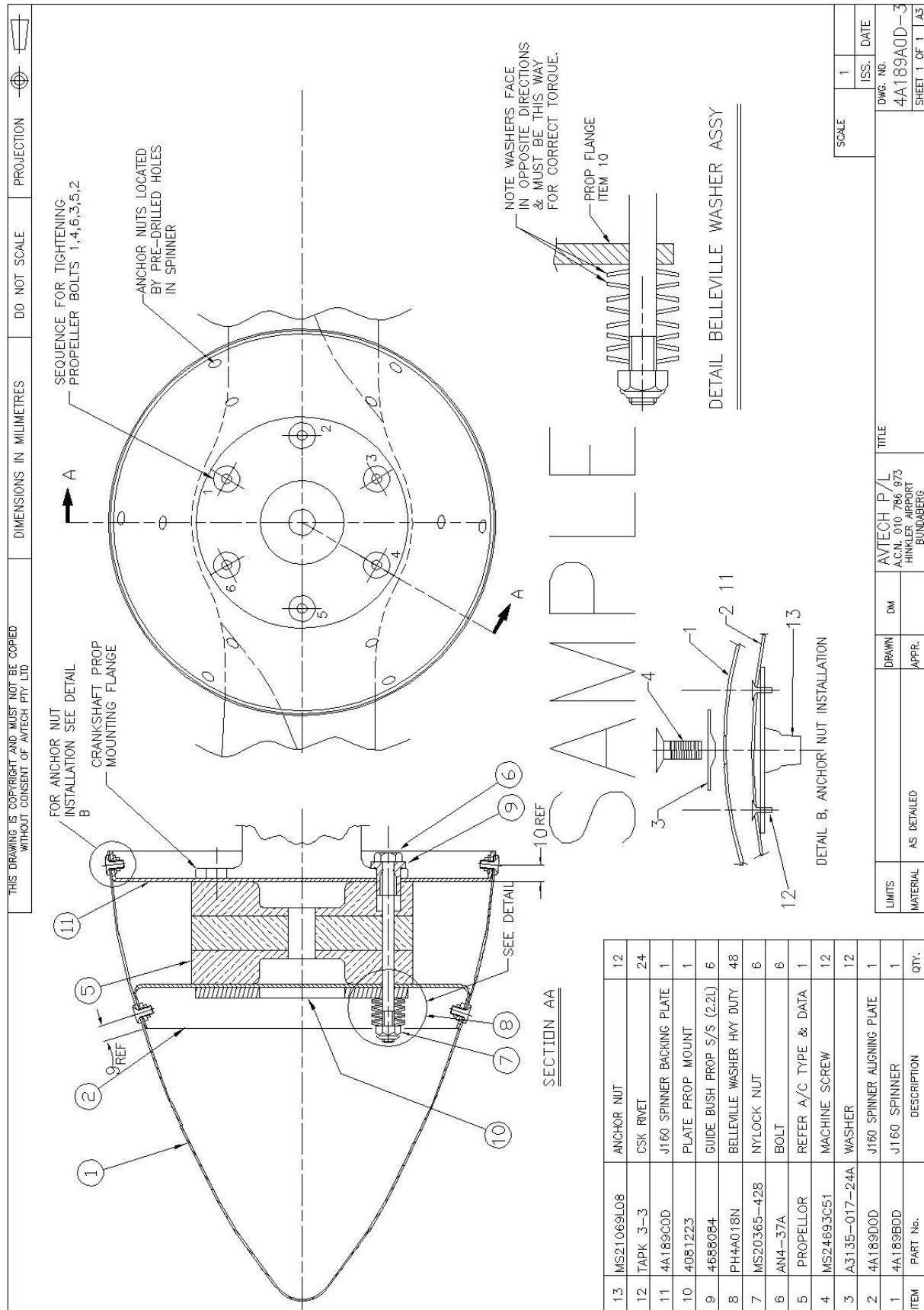


Figure 50. Propeller Installation





### **IMPORTANT**

*The Spinner is an important and integral part of the propeller Assembly. It is essential to ensure adequate engine cooling. The aircraft must not be flown with the Spinner removed.*

## **19.5 TO REMOVE EXISTING PROPELLER**

1. Remove Machine Screws and Tinnerman Washers from Spinner.
2. Remove Spinner.
3. Unbolt Propeller Bolts - 6 off.
4. Remove Bolts, Spinner Flange , Aluminium Propeller Flange, Belleville Washers and Propeller.

## **19.6 TO ASSEMBLE AND REPLACE PROPELLER ASSEMBLY**

1. Ensure that Propeller drive bushes – 6 off, are in place in the Crankshaft Propeller Flange. Fit the rear spinner backing plate to the flange.
2. Fit propeller to flange. Ensure that the drive pins are snug fit in the propeller. Loose pins can cause propeller fretting and engine damage.
3. Fit Propeller Bolts - 6 off.
4. Fit front spinner backing plate to front of propeller. The fit Aluminium Propeller Flange, Belleville Washers - 42 off: (8 per Bolt: assembled in pairs as shown)
5. Progressively tighten bolts ensuring equal distribution of load and in a normal criss-cross torque sequence.
6. Using Torque Wrench, tighten Bolts to 6nm (72 inch/lbs).
7. Check tracking of Propeller by locating a fixed object on a flat floor so that it just clears the Propeller tips when rotating the Propeller by hand. Check that each blade clears the object by the same amount. If the Propeller is outside the approved tolerance, refer to JABIRU Aircraft Pty Ltd or a JABIRU Approved Service Centre.

Maximum Tracking Error Tolerance is +/- 2mm.

8. Locate Spinner on Spinner Flange and fix with Machine Screws through tinnerman Washers.
9. Check Spinner for balance by locating a fixed object on a flat floor to just clear the lower edge of the front dome of the Spinner. Rotate the propeller by hand and check that the Spinner runs true.
10. Correct any imbalance by loosening and retightening Machine Screws.

REVISION	0							Dated : June 2005	Issued By: RAS	Page: 153 of 156
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## 19.7 SERVICING AND REPAIRS

Any service or repair must take account of the risk of subsequent Propeller failure. Therefore repairs are limited to the filling of small nicks in the Propeller. Maximum size of nicks approved for repair is:

- Those in Leading Edge: 4mm deep x 20mm long
- Those across the drive Face (flat sides) : 2mm deep x 6mm diameter or scratches not more than 0.5mm deep.

Repairs must also take account of the changes to balance of the Propeller and therefore the Propeller should be removed in accordance with the procedure described above. It must be checked for balance (see Paragraph 8) prior to refitting (see Paragraph 6), checked for tracking after reassembly (see Paragraph 6.4) and the Spinner checked for balance after reassembly (see Paragraph 6.7).

Only nicks within the size tolerances described above may be repaired. All propellers with cracks or splits (or any delamination of the composite sheath in the case of sheathed Propellers) must be either Rejected as unserviceable or returned to JABIRU Aircraft Pty Ltd or our local approved agent for assessment and possible repair.

In composite leading edges, nicks of a size described above may be repaired by filling with epoxy resin and Fibreflock using the procedure outlined below (Propeller Repair Kit is available from JABIRU as Part No. PP0049N):

1. Remove Propeller as per Paragraph 5.
2. Sand nick with abrasive paper to remove any fractured particles.
3. Mix resin carefully and thoroughly (equal parts resin and hardener) and thicken with Fibreflock to form a paste.
4. Apply paste to sanded nick and allow to cure in low moisture environment for 24 hours.
5. Lightly and carefully sand excess cured resin to a smooth surface matching exactly the previous aerofoil.
6. Refurbish with clear Epoxy paint (JABIRU Part No. PP0069N).
7. Rebalance Propeller (see Paragraph 8).
8. Reassemble and replace Propeller and Spinner (see Paragraph 6).
9. Check Propeller tracking and Spinner balance (see Paragraph 6).
10. Damaged urethane leading edges should be referred to Jabiru Aircraft Pty Ltd for repair.

## 19.8 PROPELLER BALANCING PROCEDURE

Propeller balance should be checked by locating a 16mm tube to firmly fit the centre mounting hole of the Propeller and balancing on "knife edges".

Tolerances:

- Imbalance shall not exceed the following limit whatever the position of the Propeller in the plane of rotation: 750 mm-gms (approximately 1 gm at the tip).

The balance may only be corrected by the application of epoxy paint. Any other method of securing balance is PROHIBITED.

Propellers outside these limits should be rejected as unserviceable or returned to JABIRU for assessment and possible repair.



## 20 APPENDIX V – AIRWORTHINESS LIMITATIONS

### 20.1 GENERAL

This Section sets forth each mandatory replacement time, structural inspection interval and related structural inspection procedure.

### 20.2 MANDATORY REPLACEMENT TIME

The following components MUST be replaced at the intervals described hereunder.

Table 17. Mandatory Replacement Times

Description	Part No.	Interval (Hours)
Rudder Cable	PC01714-2	2500
Elevator Cable	PC01814-1	2500
Aileron Cable (2)	PC01614-2	2500

### 20.3 STRUCTURAL INSPECTION INTERVALS

A visual inspection should be conducted each 100 hours in accordance with the Inspection Schedules detailed at Paragraph 2.3 of the Service Manual.

- This inspection should identify the commencement of any structural deterioration which will be evidenced by cracking of the paintwork, whiting of unpainted areas, movement of wing attachments and threaded bushes, movement of undercarriage attachments, loosening of firewall/engine attachments.
- Wing struts should be inspected for loose rivets, excessive clearance in wing strut attachments or corrosion.
- Cable clamps should be inspected for evidence of movement and security.

### 20.4 INSPECTION PROCEDURES

All inspection is by visual means.

Refer Paragraph 3 above and Paragraph 3.3 of the Service Manual